



## Invitation

# Directed Spontaneous Emission from an Extended Ensemble of $N$ Atoms: Timing is everything

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A collection of  $N$  static atoms is fixed in a crystal at a low temperature and prepared by a pulse of incident radiation of wave vector  $\vec{k}_0$ . The  $N$  atoms are well described by an entangled Dicke-like state, in which each atom carries a characteristic phase factor  $\exp(i\vec{k}_0 \cdot \vec{r}_j)$  where  $\vec{r}_j$  is the atomic position in the crystal. It is shown that a single photon absorbed by the  $N$  atoms will be followed by spontaneous emission in the same direction. Furthermore, phase matched emission is found when one photon is absorbed by  $N$  atoms followed by two-photon down-conversion.

and an additional related short talk

## Similar experiments with resonant gamma-radiation

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**11 Uhr c.t.**

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